



Washington Metrorail Safety Commission
Findings that require WMATA Metrorail to propose Corrective Action Plans (CAPs)
May 12, 2020

Overview: The Washington Metrorail Safety Commission has uncovered a series of major, ongoing issues in Metrorail's critical Rail Operations Control Center that, if not resolved, will continue to pose unacceptable risks for Metrorail customers, employees, and contractors.

As a result, the WMSC is issuing three new findings, which require Metrorail to propose, within 30 days of this notice, Corrective Action Plans to accomplish the following:

1. Rail controllers must be provided proper, complete and recurring training on the use of emergency ventilation fans, and rail controllers must be provided immediate access to and familiarization with the vent fan playbook that was called for by the NTSB after the January 2015 L'Enfant Plaza station arcing and smoke accident.
2. Prohibit ROCC managers and leadership from remotely manipulating consoles in the ROCC without coordinating with the controllers, and verify by periodic audit and/or computer-generated reports that uncoordinated remote manipulation has ceased.
3. Institute additional protections to ensure that third rail power is not restored prematurely, including, but not limited to, ensuring that managers and leadership permit controllers to follow all power restoration checklists and procedures to be certain power is only restored when it is safe to do so. These additional protections must include providing an independent approval from an appropriately-qualified employee outside of the Office of Rail Transportation, so that safe power restoration is always placed ahead of service metrics such as on time performance.

The findings are based on interviews with 21 of the 26 frontline controllers working in the ROCC as of mid-March, other WMSC observations and inspections, and discussions with senior ROCC leadership.

This work has made clear that while Metrorail has made progress in some areas, it has made little to no substantive progress toward some of the other most important control center fixes recommended or directed after the 2015 smoke accident near the L'Enfant Plaza station that resulted in one customer fatality and 91 injuries to customers, employees and first responders.

While on-site investigation and controller interviews were conducted just before pandemic-related service changes, the issues are even more acute now with significant staffing

limitations, the ROCC alternating between two locations, and the need to use controller instructors to keep the Metrorail system operating.

Given the limited staff, it is even more important that every single person sitting at a controller's desk fully understands how to use all vent fans when smoke events occur, and that management allows controllers to use the safety procedures to ensure third rail power is handled properly.

Among other examples provided by numerous controllers, remote operation was a regular occurrence during last summer's Blue and Yellow Line shutdown south of Reagan National Airport station. We want to ensure this does not happen again anywhere in the system except in the most extraordinary circumstances.

Uncoordinated remote operations could create conflicts or lead to trains entering areas they do not belong, which could lead to a collision, derailment, or other dangers. In one case, a work zone indication was removed from a controller's screen, despite crews remaining on the tracks.

These serious safety issues must be addressed.

Details: The WMSC has identified a series of major, ongoing safety issues in Metrorail's Rail Operations Control Center (ROCC) that, if not resolved, will continue to jeopardize safety.

The WMSC's previous initial investigation of a December 10, 2019, fire event found that the atmosphere in the ROCC during the emergency was confused and chaotic with frequent yelling by personnel and conflicting instructions. During that emergency, managers removed a controller from duty who was properly using procedures and checklists, turning what could have been a brief emergency into an hour-long slow-speed escape from smoke. The removal also delayed fire fighting operations. Further, first responders were present on the track when third-rail power was restored.

Noting that the December 10, 2019, fire response involved similar safety issues that were identified in the fatal January 12, 2015, electrical arcing and smoke accident near L'Enfant Plaza station, the WMSC issued this finding to Metrorail on December 20, 2019:

Finding: Dysfunction in the ROCC during unplanned events and emergencies that includes yelling, conflicting instructions, and the failure to use checklists detracts from the ROCC's ability to manage the rail system appropriately and effectively.

The WMSC directed Metrorail to propose a corrective action to eliminate the dangerous dysfunction within the ROCC, and the WMSC began conducting in-person ROCC observations and inspections on January 27, 2020.

After significant back and forth with the WMSC, Metrorail has just submitted a heavily revised proposed Corrective Action Plan at the WMSC's direction to require additional training for managers and other ROCC leadership that emphasizes the need to follow checklists and procedures. Metrorail also plans to review those checklists and procedures. The WMSC is still evaluating whether these plans would fully cover all management positions as required. To resolve the dangerous dysfunction within the ROCC, it is essential that all levels of ROCC management and leadership permit controllers to adhere to checklists and procedures, and that managers and other leaders avoid yelling or providing conflicting instructions.

On February 7, 2020 the WMSC announced that it had begun a safety audit of Metrorail's department of Rail Transportation (RTRA), which includes the ROCC. As part of this audit the WMSC conducted individual in-person off-site interviews with the ROCC controllers. The interviews took place between February 24, 2020 and March 13, 2020. At the time of these interviews there were 26 controllers employed at the ROCC. The WMSC was able to interview 21 controllers. The remaining controllers were unavailable due to scheduled leave.

From these interviews, and through WMSC inspections and observations, it has become clear to the WMSC that Metrorail has made little to no substantive progress toward some of the most important control center fixes recommended or directed after the 2015 fatal smoke incident near the L'Enfant Plaza Metrorail Station, despite documentation to the contrary provided to the National Transportation Safety Board (NTSB).

In addition to the examples that led to the three specific findings below, WMSC observations and interviews indicate a pattern of incidents where the ROCC Director or other ROCC leaders continue to direct controllers to violate safety rules or procedures, despite previous findings that directed Metrorail to ensure ROCC management followed checklists and other safety procedures.

These incidents included the ROCC Director instructing a controller to direct a train operator to operate past a red signal at a pocket track without first ensuring that the associated switches were clamped as required by Rule 3.67. This rule is designed to prevent derailments due to switch movement during occupancy. Another controller described an event in which the ROCC Director ordered them to instruct a train operator to move a disabled train without verifying that all doors were closed and no customers were on the tracks, as required by Rule 3.37.

Despite our prior direction, direction from the NTSB, and findings from the FTA over the last five years, on May 10, 2020, the ROCC Director told the WMSC that management was still considering whether to allow the use of checklists in some circumstances.

In 2015, the Federal Transit Administration found many veteran controllers "questioned the effectiveness of the traditional checklist-based dispatching tools used in other industries and recommended by the NTSB."

The continued regular direction to ignore checklists today is directly related to two of the three findings that follow: remote manipulation of control consoles and premature restoration of third rail power.

Due to its urgent safety concerns, the WMSC is now issuing three new findings based on our initial reviews that cannot wait for the completion of the broader RTRA audit. These new findings require Metrorail to propose Corrective Action Plans within 30 days.

1. Emergency Ventilation Fans

Nearly all controllers interviewed said that their training on the use of emergency ventilation fans was inadequate and only a few were familiar with the Emergency Ventilation Playbook on emergency fan operations that Metrorail developed after the L'Enfant Plaza accident in response to an NTSB recommendation.

"I am not confident that my coworkers know how to properly use the fans in an emergency," one controller said. Several others expressed concerns that they were unsure how to use new jet vent fans on the Silver Line in Virginia or the tracks shared by the Blue and Silver Lines between Stadium-Armory and Largo Town Center stations. "It's just a matter of time until something happens," one controller said.

While the ROCC Director told the WMSC that the ventilation system operations playbook is available in hard copy at controllers' desks, all controllers interviewed said the document was not available. Many controllers had not seen the document.

Controllers also said there was no significant fan training in their regular recertification classes.

As part of a Corrective Action Plan to address NTSB findings related to the 2015 accident, Metrorail found the proper operation of the fans is required to meet fire safety standards.

This lack of readiness to respond to smoke and fire events could lead to a repeat of the January 12, 2015, L'Enfant Plaza station electrical arcing and smoke accident, or worse.

2. Remote Manipulation

During the interviews, controllers stated that management frequently manipulates rail control consoles from a remote location without coordinating with the responsible controllers. Almost all controllers interviewed reported remote manipulation as happening to them routinely. This action was described by multiple controllers as routine during the summer 2019 shutdown south of National Airport on the Blue and Yellow Lines, for example.

Safety can be compromised when managers take remote control of the controller's consoles without the controller's knowledge; however, ROCC managers and leaders routinely do it anyway.

To safely control train traffic on a segment of track governed by a given ROCC console, a controller uses the console to control signals and switches to build routes for trains. This requires the controller to have a mental model of the intended flow of train traffic. This mental model is the controller's "movement plan." When a controller's console is remotely manipulated by a manager or other leader who does not coordinate with the controller, signals and switches may be set in a manner that conflicts with the movement plan that the controller is executing. To ensure continued safety, all persons controlling a console must have a coordinated (shared) movement plan.

The ROCC Director told the WMSC he views the remote manipulation, if it happens, as management taking control to reduce incidents, and suggested it is controllers' responsibility to be alert for unexpected remote manipulation. "They can see what they did not do," the Director said. He also said that he was not aware of remote manipulation occurring.

However, in one of the cases specifically cited in controller interviews, a work zone indication was removed from a controller's screen, despite crews remaining on the tracks.

The WMSC finds management manipulating Controllers' consoles remotely without a shared movement plan is an unsafe practice that could lead to a collision, derailment or jeopardize the safety of front line personnel.

3. Third Rail Power Restoration

During the interviews, almost all controllers said that third rail power restoration is routinely rushed by ROCC management with a focus on quickly restoring train service rather than a focus on careful adherence to safety procedures. Many said they had been rushed to restore power even while first responders or others were still on the roadway responding to an incident. This pressure has also led to other mistakes and miscommunication. The WMSC is concerned that ROCC managers and leadership are continuing to direct power restoration without regard for the safety implications of restoring power prematurely.

For example, controllers described being instructed by management to restore power without confirmation that first responders were clear of the roadway. One controller described being rushed and told "to bring power up to get the trains moving." The controller said, "We are always rushed to bring up power."

During the December 10, 2019, incident, power was restored at the direction of the ROCC Director while emergency personnel were still on the roadway. The Fire Department Liaison in the ROCC, seeing power re-energized at his workstation, contacted the emergency personnel who were still on the roadway to warn them. Since the Fire Department Liaison had not authorized power restoration, Metrorail procedures required power to remain off.

Because it appears that managers and leadership are directing power restoration in disregard of the safety implications of restoring power prematurely, the WMSC is requiring Metrorail to develop additional protections before restoring power.

Metrorail must develop procedures and systems that require at least two individuals to actively confirm that the situation is safe, and that all checklists have been followed prior to approving power restoration and actually restoring power. This decision should not be permitted solely at the direction of a ROCC manager or any other sole individual. Rather, a request and approval approach must be developed and implemented.

After a controller has requested power restoration, a second person must be required to actively approve power restoration. This second person must be an appropriate-qualified individual outside of RTRA, such as a power department employee, who can verify that procedures were properly followed. This will help ensure that safe power restoration is always placed ahead of service metrics such as on time performance.

Following the inappropriate power restoration during the December smoke response, Metrorail had made progress developing a software change to support a request and approval solution; however, current events are delaying the work. The WMSC wants to ensure that this remains a top priority item even during the current health crisis.

Conclusion

In our December 20, 2019 finding, the WMSC discussed management issuing instructions that are at odds with written safety procedures, and we noted that the failure to use checklists detracts from the ROCC's ability to manage the rail system appropriately and effectively.

The inappropriate restoration of third rail power and the remote manipulation discussed above are only some examples of management's disregard for procedures and checklists raised in Controller interviews.

Still, despite the safety risk, the ROCC Director said management is still only considering allowing controllers to use checklists, rather than committing to past promises to follow written procedures.

In prior conversations, control center management has attempted to explain their actions to the WMSC as being based on their views that standard operating procedures and checklists are not practicable in an emergency. However, an emergency is precisely the time when following procedures and checklists is of the utmost importance. Claiming that controllers who have gone through an extensive training and certification process on safety rules and checklists that have been vetted for years are not capable of doing their jobs when they actually follow those procedures is extremely concerning.

The ROCC Director reiterated management's warning that if supervisors step back to allow controllers to do their jobs according to policy there could be additional risks. If that is truly the

case, Metrorail must improve its own training, policies, checklists and procedures to fix that, rather than taking steps to block controllers from doing the jobs they are trained for.

Coaching controllers and providing training is a job ROCC management must do. Creating chaos and confusion by stepping in without coordination while yelling conflicting instructions is something they must not.

Rail Operations Control Center management has clearly disregarded many lessons of the past and has failed to improve Metrorail's preparedness. The risks of injuries and deaths are unacceptable, and Metrorail must take immediate action. The WMSC is prepared to take enforcement action if needed.

Finding: ROCC controllers are not prepared to operate the emergency ventilation fans to respond to smoke and fire events, which could lead to a repeat of the January 12, 2015, L'Enfant Plaza station electrical arcing and smoke accident, or worse.

Metrorail must propose a corrective action that addresses the following: Rail controllers must be provided proper, complete and recurring training on the use of emergency ventilation fans, and rail controllers must be provided immediate access to and familiarization with the vent fan playbook that was called for by the NTSB after the January 2015 L'Enfant Plaza station arcing and smoke accident.

Finding: ROCC management routinely remotely manipulates controllers' consoles without expressly sharing or coordinating train movement plans with the controllers, which is an unsafe practice that could lead to a collision, derailment or jeopardize the safety of front line personnel under the direction of controllers.

Metrorail must propose a corrective action that addresses the following: Prohibit ROCC managers and leadership from remotely manipulating consoles in the ROCC without coordinating with the controllers, and verify by periodic audit and/or computer-generated reports that uncoordinated remote manipulation has ceased.

Finding: Third rail power restoration is routinely rushed by ROCC management with a focus on restoring train service rather than a focus on following safety procedures.

Metrorail must propose a corrective action that addresses the following: Institute additional protections to ensure that third rail power is not restored prematurely, including, but not limited to, ensuring that managers and leadership permit all power restoration checklists and procedures are followed to be certain power is only restored when it is safe to do so. These additional protections must include providing an independent approval from an appropriately-qualified employee outside of the Office of Rail Transportation, so that safe power restoration is always placed ahead of service metrics such as on time performance.